

PG&E Vegetation Management Initiatives in Response to the Drought Emergency



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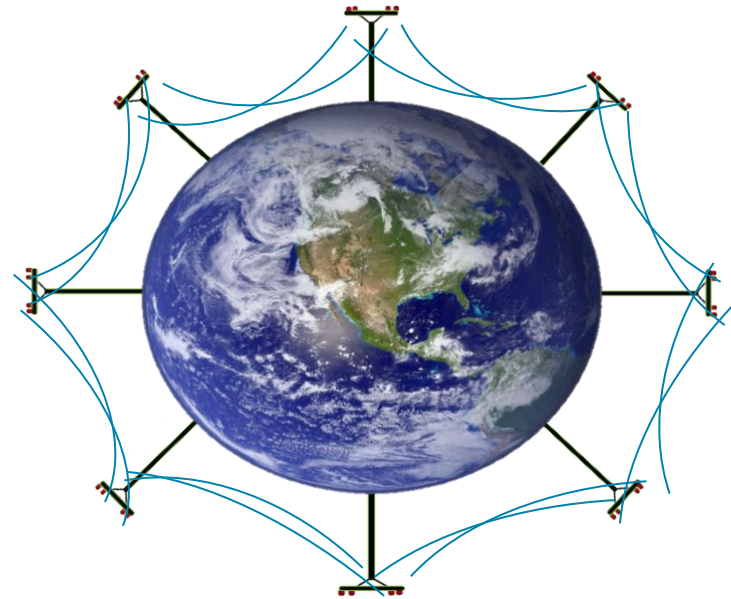
8/21/2014

Quick Summary of PG&E's Electric VM Program

Scope

- 134,000 Miles of Overhead T&D wire – or 5 times around the world
- 50 million +/- trees that could interfere with PG&E facilities
- 400 arborists, 2000 tree contractors
- 1.3 million trees/year abated

Compare



Vegetation Clearance Requirements

PRC 4293 – Utility Vegetation Management - Tree Pruning/Removal

- Maintain 4 ft. clearance from trees to 4kv-60/70 kV transmission lines
- Maintain 10 ft. clearance between trees and all transmission lines ≥ 115 kV
- Remove dead, diseased, defective and dying trees that could fall into the lines (facility protection trees)

PRC 4292 – Utility VM – Pole Clearing

- Clear 10 ft. x 8 ft. cylinder around the base of subject poles and transmission structures
- Remove dead vegetation up through the primary conductor level

CPUC G.O. 95 Rule 35 – Utility VM– Tree Pruning/Removal

- Maintain 18" of clearance between trees and primary distribution power lines and 60/70 kV, up to 10 ft. for higher voltages
- Remove facility protection trees (as defined above)
- Address trees that cause strain or abrasion on secondary conductors

NERC Standard FAC-003-3 - VM Requirements for Transmission

- Maintain Minimum Clearance Standards based on voltage class
- Zero tolerance for vegetation encroachment into the minimum clearance zone;

California is in the third year of drought:

- This year was the driest on record.
- In January, Governor Brown proclaimed a State of Emergency and directed state agencies to take all necessary actions to address the drought.
- The California Public Utilities Commission directed PG&E to take extended measures to address drought-related fire risk.
- PG&E's response has been **IN ADDITION** to its routine VM program.

PG&E's Drought Emergency Response: 6 Initiatives

- Enhanced Vegetation Inspection & Mitigation
- Wildland Urban Interface (WUI) Protection
- High Fire Risk Tree Identification and Mitigation
- Fuel Reduction & Emergency Response Access
- Early Detection of Forest Diseases/Infestation
- Early Detection Response to Wildfires

Enhanced Vegetation Inspection and Mitigation

Scope

Conduct enhanced and redundant vegetation patrols.

Mitigation Components

- Redundant ground patrols in fire prone SRA areas
- Aerial inspection of 5% of total to identify hazardous trees
- Red Flag and Pre/Event (Heat/Wind)
- After hours fire patrols

Status

Ground Inspection- Started 6/19

- 113 inspectors
- 9250 miles completed
- 3,000 trees ID'd
- Complete by Sept 30

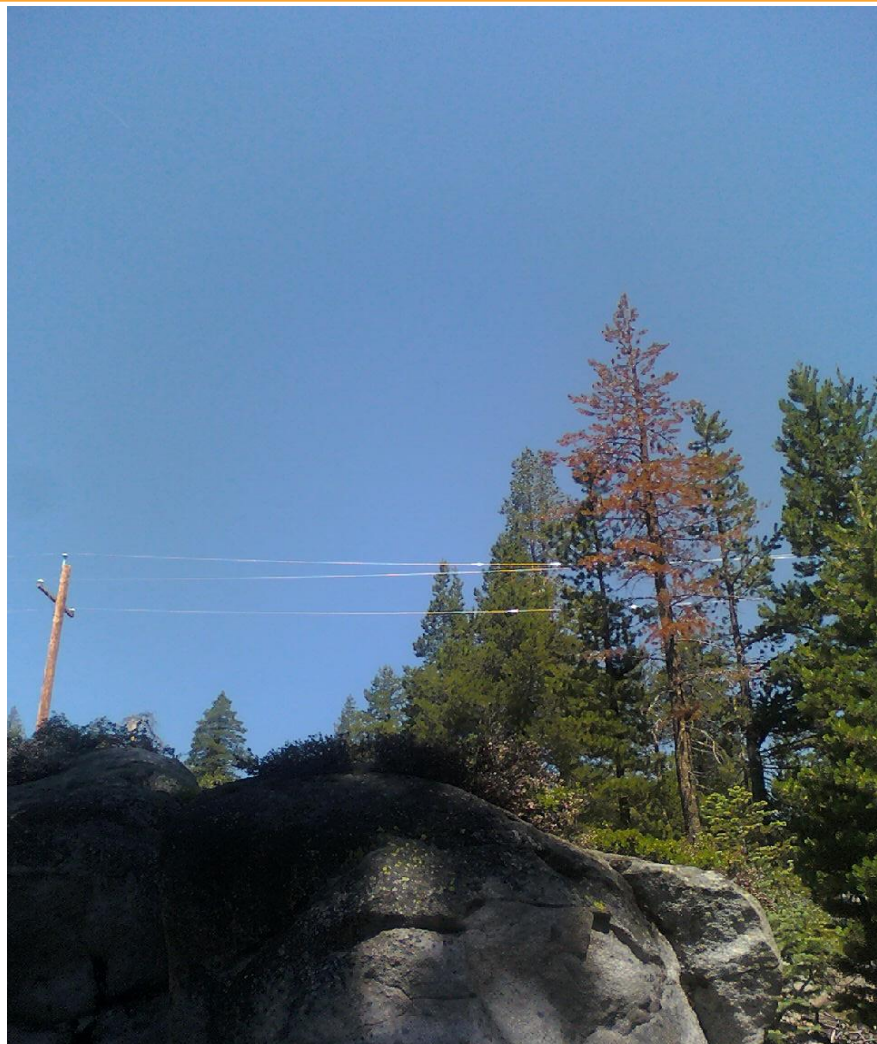
Aerial Inspection- started 7/24

- 2,700/ out of 7,000 line miles flown
- Complete by 8/31

Quality Control- started 8/9

- 20 line segments reviewed~ over 200 locations

Hazardous Tree Examples



Hwy 4 near Alpine July 21, 2014



West of Red Bluff near Wildwood July 25, 2014

Wild Land Urban Interface Protection

Scope

Treat Urban Wildland Interface (WUI) areas within LRA like it's SRA for select areas.

Mitigation Components

Inspect WUI/LRA areas for:

- Poles with “non-exempt” equipment (PRC 4292)
- Clear poles ID'd w/ “NE” equipment
- Abate hazardous trees ID'd during re-patrol.

Status

- 1400+/- line miles selected for patrol in WUI/LRA areas in all PG&E divisions.
- Pole inspections and clearing:
 - 865 poles inspected
 - 411 poles cleared
 - 62/94 line segments completed
- Very few (90+/-) additional HT's identified so far.

High Fire Risk Tree Identification and Mitigation

Scope

Implement sophisticated tree hazard identification and mitigation measures in high fire danger areas.

- LiDAR
- Hyperspectral imaging
- Species-driven analysis

Mitigation Components

- Aggressively identify and mitigate specific tree species that have known failure profiles.
- Perform LiDAR imagery flights to target 1-3 species with known failure tendencies or susceptibility to pests and vectors.
- Perform flights with LiDAR + Hyperspectral imagery to detect stressed trees.

Status

- Species-specific data extraction & over-lay complete.
- Aerial LiDAR acquisition completed by contractor.
 - Aerial LiDAR & Hyperspectral data acquisition began on 8/1.
- Mobile ground-based LiDAR began on 8/5.

Dashboard 4-D

Drum - Grass Valley - Weimar

File Windows View Mode Help

Detection Report

Voltage: 60V

Length: 32.00 mi

Aircraft Data

Latitude: 39.1790

Longitude: -120.9997

Altitude: 3120.00

Velocity: 37.30kts

Bearing: 153.10

Climb Rate: -2.10

B20/464 to B21/465

Road X-ing: 1

Water X-ing: 0

Wire X-ing: 0

MGC:

Grow In(s): 8

Fall In(s): 26

Ground(s): 0

Closest Tower: B21/465

Dist: 0.20 ft

Height: 49.70 ft

Elevation: 2760.15 ft

Insulator Type: Post

Insulator Length: 0.00 ft

Sets: 1.00

Length: 264.2380 ft

ID	Type	Lat	Long	Elev	Height	Offset	Nearest	Detect Code	Parcel ID	Status
44668	Fall In	39.17689647...	-120.998627...	2874.11	138.12	88.59377734...	B20/464	VC3c	352935275	
44696	Grow In	39.17704247...	-120.998477...	2870.89	127.13	27.11675758...	B20/464	VC1p	352938951	
44700	Fall In	39.17694265...	-120.998550...	2863.35	123.55	61.52825460...	B20/464	VC3c	352938951	
44714	Fall In	39.176706804	-120.998572...	2846.12	116.15	104.7880265...	B20/464	VC3c	352943896	
44717	Fall In	39.17697262...	-120.998587...	2855.41	115.4	66.29897873...	B20/464	VC3c	352938951	
44720	Fall In	39.176768763	-120.998506...	2847.14	113.97	78.11877080...	B20/464	VC3c	352943896	
44753	Fall In	39.17677971...	-120.998586...	2837.36	105.5	96.76343398...	B20/464	VC3c	352943896	
44760	Fall In	39.17684345...	-120.998538...	2838.18	102.53	74.315869649	B20/464	VC3c	352938951	
44765	Fall In	39.17686878...	-120.998517...	2837.13	100.41	65.10747848...	B20/464	VC3c	352938951	
44769	Fall In	39.176892305	-120.99847795	2837.56	99.54	51.18116161...	B20/464	VC3c	352938951	
44791	Grow In	39.17696908...	-120.998205...	2826.6	91.83	30.38100383...	B20/464	VC1p	352938951	

Map

Map Navigation

Video

Paused

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Fuel Reduction and Emergency Response Access

Scope

Enable fuel reduction projects to create fire breaks in and around communities & infrastructure.

Improve egress & ingress at affected communities & infrastructure.

Mitigation Components

Fund fuel reduction/road access projects that are being performed by other entities

- FSC's, NGO's, RCD's, Cal-Fire, BLM.

Complete PG&E-initiated fuel reduction/road access projects

Status

- 123 “shovel ready” fuel reduction, shaded fuel break, emergency access road and community chipper program project proposals
 - 93 projects awarded grants
 - 25% projects have signed agreements & are funded
- PG&E initiated emergency access road projects identified
- Funding to 19 counties;



Partnership between San Mateo FSC, Cal-Fire, Caltrans and PG&E



Drought Response - Fuel Reduction

Combination of fuel break and shaded fuel break along HWY 35.



Early Detection of Forest Disease or Infestation

Scope

Partner with USFS, Cal-Fire, Universities & NGO's monitoring forest health to ID and mitigate areas at risk. Use information to boost annual work and capture risk as it occurs.

Mitigation Components

Get forest health data from USFS, Calif. Forest Pest Council and Cal-Fire.

Partner w/ USFS, Cal-Fire, Universities, tribal and private forest management & NGO's & create mutual alerts & share data.

Status

- PG&E now receives bi-monthly updates from USFS.
- Partnership w/ HSU, UCD & Cal-Poly
- SOD model from UC Davis
- USFS bark beetle guide
- Applying Cal-Fire's "Identifying Dead and Dying Conifers on Private Land in California," and alert regarding exotic tree pest sighting in Santa Cruz County.
- HSU-SPF Partnership agreement and NDA fully executed.
- Insect/pests training with Cal-Fire by mid September.



Early Detection and Response to Wildfires

Scope

Fund early detection and fire response.

Mitigation Components

- Re-open & staff lookouts. Includes restoration (rebuilding if needed)
- Place high resolution infrared remote Wildland Fire Detection Camera Systems at lookouts, & other strategic locations & feed data to a central location
- Fund aerial fire detection patrols
- Support standby crews during large fires.

Status

Lookouts:

- 4 lookouts being re-built & staffed; 3 in Sierra; 1 in Humboldt.

Camera:

- USFS (7 sites): On hold
- Cal-Fire (5 sites+/-): Working @ unit level
- Fire Safe Marin, Amador/Calaveras & Santa Clara FSC's

Air Patrols:

- Mendocino Coop air patrol funded; 50% increase in coverage;
- PG&E air-ops contractors start 4 planes 8/28 in addition to Mendo Coop.
- PG&E flights cover SRA: Redding south to Kern; San Luis to Monterey; Cloverdale to Piercy

Stand By Crews:

- Not implemented



Thanks for your support!

End